EYE GEARS

Success or failure of this world's attempt to be a "Peeping Tom" on its neighboring planets depends upon the faultless accuracy of three telescope gears being ground in a special air conditioned bungalow at the California Institute of Technology. These gears, weighing about eight tons each but tiny in comparison to the famous $15,000,000 Palomar telescope on which they will be used, are being ground so slowly and carefully that they will take a year to be completed. Each tooth of the 720 on each gear must be accurate because they will train the giant eye on the skies when science is ready for its latest effort to locate new suns. The binding of the gears or slightest lurch caused by faulty grinding and the costly 200-inch lens and telescope will be useless. To obtain accurate grinding, engineers at the California Institute of Technology must have constant temperature, the special air conditioned bungalow was built inside a huge machine shop and tests showed that air temperature did not vary more than ½ degree in 24 hours. The bungalow will have a constant night and day temperature of 75 degrees Fahrenheit. The necessity for constant temperature is in the spacing of the gear teeth. If the entire gear were not kept at a constant temperature, accurate spacing of the teeth would be impossible. Teeth gashed in a colder part, would be too wide after subsequent normal heat expansion. In addition, the shaft holding the gear cutter is kept at a constant temperature with running water. Each of the eight-ton gears will measure about 14½ feet in diameter, but now they resemble a giant locomotive wheel. When complete they will be incorporated in the telescope on Palomar mountain.